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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/645,373	08/21/2003	Craig D. Tipton	3202R	7486

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THE LUBRIZOL CORPORATION  
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WICKLIFFE, OH 44092

EXAMINER
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RONESI, VICKEY M

ART UNIT	PAPER NUMBER
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1714

MAIL DATE	DELIVERY MODE
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06/07/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/645,373

Applicant(s)

TIPTON ET AL.

Examiner

Vickey Ronesi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,6-8 and 10-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,6-8 and 10-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/5/2007 has been entered.
2. In light of applicant's amendment, the outstanding 35 USC 103 rejections are withdrawn.
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior office action.

### ***Claim Objections***

4. Claim 29 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 28, on which claim 29 is dependent, already requires that the components are heated together.

### ***Claim Rejections - 35 USC § 112***

5. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 8, the borating agent is indefinite because it is broader in scope than the borating agent of independent claim 1, on which claim 8 is dependent.

***Claim Rejections - 35 USC § 103***

6. Claims 1, 6-8, 10, and 12-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis (US 4,136,043) in view of Le Suer '936 (US 4,087,936).

Davis discloses a multifunctional dispersant for lubricants for internal combustion engines such as automatic transmissions (col. 1, lines 57-59; col. 13, line 45) comprising the reaction product of 2,5-dimercapto-1,3,4-thiadiazole and derivatives thereof (which includes hydrocarbyl-substituted compounds) (col. 2, lines 6-37) and a carboxylic dispersant such as a succinimide (col. 2, lines 58-63; Example 1) which is already treated with boron or phosphorus compounds (col. 3, lines 36-41)—wherein the multifunctional dispersants is prepared by heating the mixture at a temperature above 100°C in a lubricant (abstract; col. 7, lines 28-31; col. 9, lines 18-37). The multifunctional dispersant is used in an amount of 0.05-20.0 parts by weight for 100 parts by weight of an oil lubricant (col. 13, lines 50-52; e.g., about 2 wt % of the lubricant composition in Examples A, B, and C of Table II). Davis teaches that 0.1-10 parts by weight of dispersant is used per 1 part of DMTD (col. 10, lines 59-61) and exemplifies a sulfur content of up to 2.9 wt % (Examples 26-34). While the dispersant is first reacted with the boron or phosphorus compound and then reacted with the DMTD, the present claim is open to this stepwise procedure given that only a step of “heating together” is recited which does not exclude heating together of a preformed dispersant and boron or phosphorus compound with DMTD.

While Davis teaches the use of boron- or phosphorus-modified dispersant in the reaction, it does not exemplify or disclose a combination of a specific dispersant with a boron or phosphorus compound, nevertheless, given that it teaches the post treatment of the dispersant with a boron or phosphorus compound prior to reacting with the thiadiazole compound, it would have been obvious to one of ordinary skill in the art to utilize boron- or phosphorus-treated dispersants to prepare the multifunctional dispersant of Davis.

While Davis teaches the use of a boron compound to post treat the dispersant, it fails to further elaborate on the type of boron compound or the relative amount of boron. Note in col. 3, line 43, where Davis refers to US 3,087,936 (Le Suer '936) as exemplifying suitable post-treating compounds.

Le Suer '936 discloses the reaction product of a dispersant and a boron compound such as boric acid and boron oxide (col. 17, lines 16-29) at elevated temperatures (col. 17, lines 62-74). Exemplified relative amounts of dispersant to boron compound (e.g., boric acid) are 3.8 (Example B) and 2.6 (Example G). Elemental boron contents with boric acid include 0.33 % (Example B) and 0.43 % (Example G).

Given that Davis teaches that post-treating the dispersant with boron is suitable and further given that Le Suer '936 teaches that boron-containing dispersant compounds are particularly advantageously used in lubricant compositions for high-temperature engines (col. 2, lines 12-15), it would have been obvious to one of ordinary skill in the art to utilize suitable amounts of boron compounds like boric acid of Le Suer '936 with the multifunctional dispersant compounds of Davis.

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7. Claims 1, 6-8, 10, 11, and 12-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis (US 4,136,043) in view of Le Suer (US 3,502,677).

The discussion with respect to Davis and Le Suer '936 in paragraph 6 above is incorporated here by reference.

Davis teaches that 0.1-10 parts by weight of dispersant is used per 1 part of DMTD (col. 10, lines 59-61). While Davis teaches the use of a phosphorus compound to post treat the dispersant, it fails to further elaborate on the type of phosphorus compound or the relative amount of phosphorus. Note in col. 3, line 46, where Davis refers to US 3,502,677 (Le Suer '677) as exemplifying suitable post-treating compounds. While neither Davis nor Le Suer '677 teaches using mixtures of boron and phosphorus compounds, it is considered that it would have been obvious to one of ordinary skill in the art to utilize a mixture of boron and phosphorus compounds since they are both used to treat dispersants in lubricant compositions. Case law holds that it is *prima facie* obvious to combine two ingredients, each of which is targeted by the prior art to be useful for the same purpose. *In re Lindner* 457 F.2d 506, 509, 173 USPQ 356, 359 (CCPA 1972).

Le Suer '677 discloses the reaction product of a dispersant and a phosphorus compound such as phosphoric acids, phosphorous acids, and anhydrides thereof (col. 2, lines 19-23; col. 4, line 74 to col. 5, line 14) at elevated temperatures (col. 8, lines 30-37). The exemplified final products have exemplified amounts of up to about 1 wt % phosphorus (e.g., Example 1-5), which intrinsically provide for the presently claimed amount of phosphorus-containing compound.

Given that Davis teaches that post-treating the dispersant with phosphorus is suitable and further given that Le Suer '677 teaches that phosphorus-containing dispersant compounds are

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particularly advantageously used in lubricant compositions (col. 2, lines 1-11), it would have been obvious to one of ordinary skill in the art to utilize suitable amounts of phosphorus-containing compounds of Le Seur '677 with the multifunctional dispersant compounds of Davis.

### *Response to Arguments*

8. Applicant's arguments filed 4/5/2007 have been fully considered but they are not persuasive. Specifically, applicant argues (A) that heating together a mixture of the components is to be distinguished from adding and reacting each of the components sequentially; (B) that the 37 CFR 1.132 declaration of Dr. Tipton compares reaction products of boric and long chain alkyl borates which established criticality for the presently claimed boric acid; (C) that the data in the 37 CFR 1.132 declaration of Dr. Tipton is reasonably commensurate in scope with the claimed invention; and (D) that Le Suer '936 does not use boric acid itself in a lubricant formulation.

With respect to argument (A), while the dispersant is first reacted with the boron or phosphorus compound and then reacted with the DMTD, the present claim is open to this stepwise procedure given that only a step of "heating together" is recited which does not exclude heating together of a preformed dispersant and boron or phosphorus compound with DMTD. Once the components are reacted together, they are heated, i.e., the mixture is heated.

With respect to argument (B), first, the declaration does not provide a reaction product of a succinimide dispersant and long chain alkyl borates. Rather, Formulation 1 (comparative data) of the declaration only adds the long alkyl borate to the dispersant. Second, the data is not a comparison the closest prior art of Le Suer '936, which discloses and exemplifies boric acid and not long chain alkyl borates. Case law holds that comparative showings must compare the

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claimed subject matter with the closest prior art to be effective. See *In re Burckel*, 592 F.2d 1175, 1179, 201 USPQ 67, 71 (CCPA 1979).

With respect to argument (C), the data is not reasonably commensurate in scope given that the exemplified borating agent is boric acid, wherein neither boron trioxide nor alkyl borates are exemplified. Case law holds that evidence of superior properties in one species insufficient to establish the nonobviousness of a subgenus containing hundreds of compounds). *In re Greenfield*, 571 F.2d 1185, 1189, 197 USPQ 227, 230 (CCPA 1978). Second, it is not shown if the evidence of superior properties would be had through all ratios of reactants. Case law holds that whether the unexpected results are the result of unexpectedly improved results or a property not taught by the prior art, the “objective evidence of nonobviousness must be commensurate in scope with the claims which the evidence is offered to support.” In other words, the showing of unexpected results must be reviewed to see if the results occur over the entire claimed range (i.e., scope). *In re Clemens*, 622 F.2d 1029, 1036, 206 USPQ 289, 296 (CCPA 1980), MPEP 716.02(d). Specifically, only a formulation with a ratio of 1000 parts succinimide dispersant : 14 parts DMTD : 30 parts boric acid is given. The examples from the specification as originally filed fail to buttress the data of the declaration (ratios of succinimide : DMTD : boric acid are at 1000 : 14 : 30) because the ratios are the same.

With respect to argument (D), the examiner agrees that Le Suer '936 does not use boric acid directly in lubricant compositions. Rather, Le Suer '936 discloses a product comprising a succinimide dispersant and boric acid (like presently claimed), wherein this reacted product is useful in lubricant compositions (col. 1, lines 9-16).



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*Conclusion*

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vickey Ronesi whose telephone number is (571) 272-2701. The examiner can normally be reached on Monday - Friday, 8:30 a.m. - 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

5/31/2007

Vickey Ronesi



/Vasu Jagannathan/

Supervisory Patent Examiner  
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